

CHAPTER 4

RESULTS AND DISCUSSION

This chapter presents the results and discussion of the data analysis. The findings are presented as follows: (1) characteristics of the sample and relationships among personal factors and decision making regarding cesarean section and vaginal delivery, (2) relationships between perceptions of cesarean section and decision making regarding cesarean section and vaginal delivery, (3) relationships between decision making style and decision making regarding cesarean section and vaginal delivery, and (4) predictors of decision making regarding cesarean section and vaginal delivery.

1. Characteristics of the Sample and Relationship between Personal Factors and Decision Making Regarding Cesarean Section

The characteristics and relationships are provided in tabular form below.

Table 8

Personal Factors and Decision Making Regarding Cesarean Section and Vaginal Delivery

Variable	Cesarean delivery (n = 63)	Vaginal delivery (n = 371)	Total (N = 434)
	No. (percent)	No. (percent)	No. (percent)
Age (years)			
15-24	15 (23.81)	148 (39.89)	163 (37.56)
25-29	21 (33.34)	127 (34.23)	148 (34.10)
30-45	27 (42.85)	96 (25.88)	123 (28.34)
$(\chi^2 = 9.20, c.c. = .14, p = .010)$			
Educational level			
< 12 years	9 (14.28)	92 (24.79)	101 (23.27)
12 years	18 (28.57)	148 (39.89)	166 (38.25)
> 12 years	36 (57.14)	131 (35.31)	167 (38.48)
$(\chi^2 = 11.03, c.c. = .16, p = .004)$			
Occupation			
Housewife	25 (39.68)	198 (53.37)	223 (51.38)
Working women	38 (60.32)	173 (46.63)	211 (48.62)
$(\chi^2 = 4.04, c.c. = .10, p = .044)$			
Family income (Baht per month)			
< 10,000	19 (30.16)	146 (39.35)	165 (38.02)
10,000-20,000	20 (31.75)	139 (37.47)	159 (36.63)
> 20,000	24 (38.09)	86 (23.18)	110 (25.34)
$(\chi^2 = 6.41, c.c. = .12, p = .041)$			

Table 8 (cont'd.)

Personal Factors and Decision Making Regarding Cesarean Section and Vaginal Delivery

Variable	Cesarean delivery (n = 63)	Vaginal delivery (n = 371)	Total (N = 434)
	No. (percent)	No. (percent)	No. (percent)
Parity			
1	41 (65.08)	235 (63.34)	276 (63.59)
≥ 2	22 (34.92)	136 (36.66)	158 (36.41)
	$(\chi^2 = .07, \text{c.c.} = .01, p = .791)$		
Health insurance			
Self payment	33 (52.38)	264 (71.16)	297 (68.43)
Reimbursement	30 (47.62)	107 (28.84)	137 (31.57)
	$(\chi^2 = 8.79, \text{c.c.} = .14, p = .003)$		
Home location			
Urban	52 (82.54)	284 (76.55)	336 (77.42)
Rural	11 (17.46)	87 (23.45)	98 (22.58)
	$(\chi^2 = 1.11, \text{c.c.} = .05, p = .293)$		
Selection of hospital for prenatal care			
Government hospital	44 (69.84)	178 (47.98)	222 (51.15)
Private hospital	19 (30.16)	193 (52.02)	212 (48.85)
	$(\chi^2 = 10.30, \text{c.c.} = .15, p = .001)$		
Total	63 (14.52)	371 (85.48)	434 (100)

Table 8 showed that the age of the majority of the subjects (37.56%) was 15 to 24 years. In term of education, most of the subject (38.48%) had completed higher than 12 years of education. Above half of the subjects (51.38%) were housewife. The thirty-eight percents of the subjects had monthly earning less than 10,000 Baht. More than half of the subjects (63.59%) was first parity. More than half of the subjects (68.43%) were self-payment. The majority of the subjects lived in urban, and a half of the subjects were booking in the government hospital.

The findings showed that the majority of cesarean women were 30-45 years old (42.85%), had higher than high school education (more than 12 years) (57.14%), were working (60.32%), had monthly family incomes higher than 20,000 Baht (38.09%), were having their first baby (65.08%), paid for medical services themselves (52.38%), lived in urban areas (82.54%), and delivered at a government hospital (69.84%). Two of the factors analyzed, parity and location of home, were not significantly statistically correlated with decision making regarding cesarean section. Of the pregnant women in the sample, 14.52% had expected cesarean section while 85.48% had anticipated vaginal delivery.

2. Relationships between Perceptions of Cesarean Section and Decision Making regarding Cesarean Section and Vaginal Delivery.

The relationships between mothers' perceptions of cesarean delivery and their eventual decision regarding delivery method are provided in Table 9.

Table 9

Perceptions of Cesarean Section and Decision Making Regarding Cesarean Section and Vaginal Delivery

Variable	Cesarean delivery (n = 63)	Vaginal delivery (n = 371)	Total (N = 434)
	No. (percent)	No. (percent)	No. (percent)
Perceptions of susceptibility			
High level scores	34 (53.97)	157 (42.32)	191 (44.00)
Low level scores	29 (46.03)	214 (57.68)	243 (56.00)
$(\chi^2 = 2.98, \text{c.c.} = .08, p = .084)$			
Perceptions of seriousness			
High level scores	26 (41.27)	205 (55.26)	231 (53.23)
Low level scores	37 (58.73)	166 (44.74)	203 (46.77)
$(\chi^2 = 4.34, \text{c.c.} = .10, p = .037)$			
Perceptions of benefits			
High level scores	39 (61.90)	147 (39.62)	186 (42.86)
Low level scores	24 (38.10)	224 (60.38)	248 (57.14)
$(\chi^2 = 11.08, \text{c.c.} = .16, p = .001)$			
Perceptions of barriers			
High level scores	37 (58.73)	184 (49.60)	221 (50.92)
Low level scores	26 (41.27)	187 (50.40)	213 (49.08)
$(\chi^2 = 1.74, \text{c.c.} = .06, p = .187)$			
Total scores of perceptions of cesarean delivery			
High level scores	33 (52.38)	150 (40.43)	183 (42.17)
Low level scores	30 (47.62)	221 (59.57)	251 (57.83)
$(\chi^2 = 3.26, \text{c.c.} = .08, p = .071)$			

Table 9 showed that in each of the categories of perception measured, pregnant women who elected cesarean birth had a greater percentage with higher level scores indicating a generally higher level of understanding regarding the cesarean section compared to those who elected vaginal birth.

3. Relationships between Decision Making Style and Decision Making regarding Cesarean Section and Vaginal Delivery

The relationship between decision making style (DMS) and decision making regarding birth mode is shown in Table 10.

Table 10

Decision Making Style (DMS) and Decision Making Regarding Cesarean Section and Vaginal Delivery

Variable	Cesarean delivery (n = 63)	Vaginal delivery (n = 371)	Total (N = 434)
	No. (percent)	No. (percent)	No. (percent)
Rational DMS			
High level scores	25 (39.68)	197 (53.09)	222 (51.15)
Low level scores	38 (60.32)	174 (46.91)	212 (48.85)
$(\chi^2 = 3.88, \text{c.c.} = .09, \text{p} = .049)$			
Intuitive DMS			
High level scores	28 (44.45)	172 (46.36)	200 (46.08)
Low level scores	35 (55.55)	199 (53.64)	234 (53.92)
$(\chi^2 = .08, \text{c.c.} = .01, \text{p} = .778)$			
Dependent DMS			
High level scores	30 (47.62)	187 (50.40)	217 (50.00)
Low level scores	33 (52.38)	184 (49.59)	217 (50.00)
$(\chi^2 = .17, \text{c.c.} = .02, \text{p} = .683)$			
Avoidant DMS			
High level scores	29 (46.03)	174 (46.90)	203 (46.77)
Low level scores	34 (53.97)	197 (53.09)	213 (53.23)
$(\chi^2 = .02, \text{c.c.} = .01, \text{p} = .898)$			
Spontaneous DMS			
High level scores	27 (42.86)	146 (39.35)	173 (39.86)
Low level scores	36 (57.14)	225 (60.65)	261 (60.14)
$(\chi^2 = .28, \text{c.c.} = .03, \text{p} = .599)$			

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Table 10 showed that the majority of cesarean women had low level scores in rational DMS, intuitive DMS, dependent DMS, avoidant DMS, and spontaneous DMS compared with pregnant women choosing normal delivery; however, only rational DMS was statistically significant ($\chi^2 = 3.88, p = .049$).

4. The Predictors of Decision Making regarding Cesarean Section

Results of the multiple logistic regression analysis conducted to identify the key predictors of decision making to have a cesarean birth are summarized in Table 11.

Table 11

Predictors of Decision Making Regarding Cesarean Section

Variable	Odds Ratio	95% Confidence Interval (CI)	p-value
Age (years)			
15-29			
30-45	2.77	1.48 – 5.21	.002
Educational level			
≤ 12 years			
> 12 years	3.42	1.85 – 6.33	.000
Selection of hospital for prenatal care			
Government hospital	4.73	2.40 – 9.31	.000
Private hospital			
Perceptions of benefits of cesarean delivery			
High level scores	2.36	1.31 – 4.23	.004
Low level scores			
Rational decision making style			
High level scores	0.48	0.27 - 0.87	.015
Low level scores			

Nagelkerke $R^2 = 0.208$, Predictive power = 86.30%

Table 11 showed that five factors (age, educational level, selection of hospital for prenatal care, perceived benefits of cesarean section and rational decision making style) were found to predict cesarean section with a significance at $p < .01$ and a power of prediction of 86.30%. Together, these factors were able to explain 20.80% of the variance in decision making regarding cesarean section. For example, in Table 11 the odds ratio in pregnant women aged 30 to 45 years showed them to be 2.77 times more likely to have a cesarean section than were pregnant women aged 15 to 29 years.

Discussion

This section presents the discussion following the key objectives of the study about decision making regarding cesarean section among Thai pregnant women. Those of replies that objectives are organized into four topics: (1) the relationship between personal factors and decision making regarding cesarean section, (2) the relationship between perceptions of cesarean section and decision making regarding cesarean section, (3) the relationship between decision making style and decision making regarding cesarean section, and (4) the predictors of the above three factors regarding cesarean section in the absence of medical indications. These discussions are described below.

1. Personal Factors and Decision Making Regarding Cesarean Section

The factors included in the study were age, educational level, occupation, family income, health insurance, selection of hospital for prenatal care, parity, and home location. The first six of these factors was found to be significantly correlated with birth mode selection ($p < .05$), while the correlation with parity and home location was not significant (Table 8). It is noteworthy that nearly all the women in the study who selected cesarean delivery (95.21%) indicated that they desired more information about birth mode options. For all values of personal factors, the chief criteria these pregnant women said they used in making their decision were safety for themselves and of their infant (Table F2). A detailed review of each of the factors is provided below.

1.1 Age

The largest proportion of women who selected cesarean section were older, i.e., age 30 to 45 (27 of 123 or 21.95%). The proportion of younger women, both those age 25 to 29 and age 15 to 24 who elected cesarean was lower (21 of 148 or 14.19%, and 15 of 163 or 9.20%), respectively (Table 8). Possible reasons for this disparity in selection of cesarean could include the relatively lower confidence in one's ability to cope with labor, higher anxiety and expectations regarding ability to give birth vaginally as identified by Lowe (1991) and Ryding et al. (1993). Furthermore, pregnancy complications, both maternal and Peipertnatal have been found to develop more often in women aged over 35, e.g., antepartum complications (pre-eclampsia, diabetes, chronic hypertension, abruptio placenta, placenta previa, multiple gestation and myoma uteri) as reported in Berkowitz et al (1990), Edge and Laros (1993), Hansen (1986), Srisomboon and Tongsung (1994).

Older age was also found to be related to prolonged labor because of decrement in uterine contraction and pushing power (Charoenphanich, 1995). On the positive side, private physicians tend to develop a stronger relationship with their clients, they may be more committed to them and more inclined to providing technology-intensive and high standard care (Sakala, 1993). Although older pregnant women likely do not have a complete medial understanding of each of the potential problems described above, they would be expected to have a general understanding of the fact that pregnancies in older pregnant women incur higher risks than in younger pregnant women, and that private physicians can provide more personal care which would contribute to the higher rate of cesareans in older pregnant women. A potentially complicating factor is that cesarean births and private physicians both cost

more than the alternative, and older pregnant women would be expected to have on average more financial resources available than younger pregnant women. The issue of family income, which is used in this study as an indicator of financial capacity, is discussed in a later section. Another potential complicating factor is that physicians in general are more likely to recommend cesarean birth for older pregnant women as noted in Berga (1997). A similar study was conducted by Wichaiditsa (1998). The positive correlation between age and incidence of cesarean section were conducted by Laohatapongpuri (1996) Chaiprasit (1993), Pothong (2002) in Thailand and Clark & Taffel (1995), Guihard & Blondel (2001), Kraus & Massan (2001), Mor-Yosef et al (1990), Paul & Miller (1995), Peipert & Brecken (1993), Tussing & Wojtowycz (1992), and Woolbright (1996) in other countries.

1.2 Educational Level

Pregnant women who had an education level of over 12 years (high school diploma, bachelors degree or higher) groups had a proportion of higher rate of cesarean section (36 of 167 or 21.55%), than those with 12 years (high school diploma) or less (18 of 166 or 10.84%) (Table 8). Possible underlying factors resulting in this significant difference could include that educated pregnant women are better able to search for health related information from a larger number of sources. Much of the information available regarding birth modes tends to promote cesarean as being safer for all babies, e.g., (Sakala, 1993). Pregnant women who have a high education level also tend to expect higher levels of health service (French, 1985), and, as noted elsewhere in this report, cesarean birth is often seen as being a higher quality of health service. As with older pregnant women, women with more

than a high school education were more likely to have a private physician (110 of 167 or 65.86%) than those with high school or below (69 of 267 or 25.84%) (Table F3).

Again, financial status/family income would be expected to be a complicating factor as there is likely a significant degree of multicollinearity between educational level and family income (Table F 4): post secondary education in Thailand is not free, so the more well-to-do would be expected to have better access to the university system. In addition, financial incomes of college graduates are on average higher than those with a high school education or lower. A similar study was conducted by Wichaiditsa (1998). Educational level has been consistently shown to be correlated with cesarean delivery. Overall, these studies found a relationship between education and incidence of cesarean section, as did Tunsupphom (1990), Laohatapongpuri (1996), Pothong (2002), Suwaree (1998), in Thailand and Woolbright (1996) in the U.S.

1.3 Occupation

The majority of the pregnant women (60.32%) who chose cesarean section were working women. Occupation was significantly related to cesarean delivery ($p < .05$) (Table 8). Considerations of working women which would induce them to consider cesarean include the relative importance placed on convenience in terms of scheduling time of delivery. In addition, working women also have colleagues to persuade to have cesarean delivery as noted by Wichaiditsa (1998). Similar to Wichaiditsa (1998) found that occupation was related to mothers' decision to choose cesarean section. Several other researchers, including Laohatapongpuri (1996), and

Fawcett, Pollio and Tully (1992) have found a relationship between occupation and cesarean section.

Another occupation-related inducement to select cesarean is the government employees' health benefit program. Government and state enterprise employees and dependants of those employees are reimbursed for their birth-related health care costs regardless of whether they elect cesarean or vaginal birth. Thus, from the employees' viewpoint, cesarean in a government hospital is no more expensive than vaginal birth. If the birth is in a private hospital, the patient is reimbursed for only a portion of the costs, which would encourage those eligible for government health benefits to give birth in a government hospital.

1.4 Family Income

There was a positive association between income and decision making regarding cesarean section ($p < .05$) (Table 8). The majority of pregnant women who decided to have cesarean delivery (69.84%) had monthly family incomes higher than 10,000 Baht per month. It is probable that the ability to pay for a cesarean operation, i.e., higher incomes, was an inducement to select that birth mode. Wichaiditsa (1998) found that families' incomes were correlated with mothers' decision to choose cesarean section. Mutryn (1993), Charoenphanich (1988), Laohatapongpuri (1996) and Gould et al. (1989) found that family income was positively correlated with incidence of cesarean section.

1.5 Health Insurance

There was a positive association between health insurance and decision making regarding cesarean section ($p < .05$). Closely related to family income is the level of health insurance coverage. In this study, nearly twice as many people who were reimbursed for medical costs elected cesarean versus those who had to pay for the expenses themselves (30 of 137 or 21.90%, vs. 33 of 297 or 11.11%) (Table 8). As in Thailand few private sector businesses provide health insurance coverage for their employees, the majority of those who were covered by health insurance were government or state enterprise employees.

1.6 Selection of Hospital for Prenatal Care

In this study, an equal number of pregnant women gave birth in government and private hospitals. The survey found that the pregnant women in government and private hospitals trusted and were satisfied the physicians and health care services to an equal extent. However, there was a statistically significant difference between type of hospital and decision regarding cesarean section, with a proportion 69.84% of cesarean operations being performed in government hospitals versus 30.16% in private hospitals ($p = .001$) (Table 8). This finding is in line with the studies by Tangcharoensathein (1998). Reasons for the higher cesarean rate in government hospitals could include the factors mentioned above including the lower cost of cesarean in government hospitals and the government and state enterprise health insurance system.

1.7 Home Location

A higher proportion of pregnant women who lived in urban areas of Bangkok, the national capital, decided to have a cesarean section in the absence of medical indications than those who lived in suburban areas surrounding Bangkok (52 of 336 or 15.47% versus 11 of 98 or 11.22% (Table 8); however, this difference was not statistically significant indicating that home location did not affect decision about mode of delivery. It is possible that these two groups, living in relatively close proximity, received information from the same sources.

1.8 Parity

The majority of nulliparous who elected cesarean birth was high (65.08%). However, in this study no statistically significant difference was found between parity and birth method (Table 8). Wichaiditsa (1998) found that gravida were correlated with mothers' decision to choose cesarean section. Laohatapongpuri (1996), and Wilkinson et al., (1998) found that mothers having their first baby had a high cesarean section rate.

2. Perceptions of Cesarean Section and Decision Making Regarding Cesarean Section

Four categories of perception related to cesarean section (susceptibility, seriousness, benefits, and barriers) were analyzed to identify associations with birth mode. Of those four, two factors, seriousness and benefits were found to have a statistically significant correlation at $p < .05$ (Table 9). Details of number and percentage of each item of perceptions of cesarean section is shown in Table F7.

Perceived seriousness includes feelings concerning the seriousness of potential medical, clinical as well as social consequences of a birth procedure. This study found 41.27% of pregnant women choosing cesarean section who scored high on this factor was significantly lower than for 55.26% of pregnant women choosing vaginal birth. This would indicate that women choosing cesarean did not feel that the procedure was a serious risk. Poothong (1987) found that perceived seriousness to pregnancy complications was positively correlated with prenatal booking services. Oopasiriwit (1988) reported that perceived seriousness to health problem was positively correlated with self-care behavior of pregnant women.

The factor of perceived benefits is defined as personal beliefs regarding the effectiveness of the various actions available in reducing the disease threat. The proportion of women who elected cesarean section scored significantly higher than the proportion of those electing vaginal birth (61.90% vs. 38.10%), at $p = .001$ level. That is, women electing cesarean birth believed that the method had very great benefits compared to the other group. Oopasirivit (1989) found that perceived benefits to self-care behavior was positively correlated with health behavior. Perceived benefits to self-care behavior or health behavior was positively correlated and predictor of health promotion behavior (Jaruwachareewong, 1993; Limtoprasert, 1991; Nirattharadorn, 1996; Suwabhabh, 1994).

Susceptibility, in the case of election of cesarean section birth mode, refers to the beliefs, the thoughts, and the feelings of pregnant women regarding complications and consequences involving in physical risk, psychological risk, social risk and financial risk which affect both herself and her infant as described above. This study found that the proportion of pregnant women electing cesarean who scored high in

this category, 53.97%, was not significantly different from the proportion at 42.32% of women who had a vaginal birth who scored high.

Perceived barriers includes potential negative aspects of a particular health action which may act as impediments to undertaking the recommended behavior. There was no statistically significant difference between the two groups in terms of the proportion of this factor: 58.73% and 49.60% for cesarean and vaginal birth modes, respectively.

3. Decision Making Style (DMS) and Decision Making Regarding Cesarean Section

Of the five decision making styles evaluated (rational DMS, intuitive DMS, dependent DMS, avoidant DMS and spontaneous DMS), only rational DMS was statistically significant ($p < .05$) (Table 10). No reason for the lack of difference between groups in the areas of dependent DMS, avoidant DMS, and spontaneous DMS was immediately evident. The number and percentage of pregnant women who selected each item of decision making style is shown in Table F8.

Approximately 40% of pregnant women who decided on cesarean delivery, only 39.68% had high level scores for rational DMS, whereas 53.09% of pregnant women who elected vaginal delivery had high level scores for rational DMS. As described above, rational decision making style measures the ability to perceive, understand, and anticipate the consequences of previous decisions upon later decisions and willingness to accept responsibility for their decisions. This finding would indicate that those pregnant women who chose vaginal birth employed rational

decision making and probably attempted to gather information on available choices to a greater extent than those who chose cesarean section.

No statistically significant difference in intuitive DMS between cesarean and vaginal birth women was found. The proportion of each group with a high level of intuitive DMS was 44.45% and 46.36%, respectively. That finding indicates that both groups had a similar lack of anticipation of future events, little information-seeking behavior, and little or no logical weighing of decision-related factors.

In the case of dependent DMS, the 47.62% of the proportion of cesarean group scored high, while the figure for the proportion of vaginal group was 50.40%. Again, there was no statistically significant difference, i.e., both groups equally exhibited a denial of responsibility for choice on the part of the decider and a projection of that responsibility to external events or other individuals.

For avoidant DMS, the same pattern was repeated: 46.03% of proportion of cesarean birth mothers and 46.90% of proportion of vaginal birth mothers scored high for this factor, showing no statistically significant difference. Avoidant DMS is characterized by attempts to avoid decision making, e.g., a pregnant woman using this style of decision making include many of those who do not seek pre-natal care until the birth is imminent who will not make a decision regarding birth mode, leaving the choice to the doctor.

In the case of spontaneous DMS, a pregnant woman employing this style of decision making will make a last minute decision regarding birth mode, with little or no consultation with attending physicians. Again, there was no statistically significant difference between the 42.86% of proportion of those choosing cesarean mode who scored high on this factor and the 39.35% of proportion of those choosing

vaginal mode. Chantachot (1988) reported that head nurse who had high scores of confidence, creativity, flexibility, judgement and reasoning were high level of decision making ability. Serekajornkicharoen (1993) studied factors affecting decision-making ability of chiefs of health center, and reported that chiefs of health center have good decision making.

4. Predictors of Decision Making Regarding Cesarean Section

As noted above, univariate analysis found that of the nine factors initially proposed, five were significant at $p < .01$ level or better: age, educational level, selection of hospital for prenatal care, perceptions of benefits of cesarean section and rational decision making style. The remaining four factors, occupation, family income, health insurance, and seriousness of cesarean section were found not to be significantly associated with birth mode and were dropped from the analysis. The remaining five factors provided a power of prediction of 86.30% and explanation the event of 20.80% of variance (Table 11). Overall, the pregnant women who made a decision to have a cesarean section were older, had high education level or more, high level scores of perceptions of cesarean section benefits and had low level scores of rational decision making style. For example, the odds ratio in pregnant women with high scores of rational DMS showed 52% less likely to choose cesarean section than pregnant women with low scores of rational DMS.

Some important aspects of the results can be summarized as follows. Decision making regarding cesarean section in pregnant women for those who aged 30 to 45, high school or higher educational level, select government hospital for prenatal care

than private hospital, pregnant women with high scores of perceived benefits of cesarean section, pregnant women with low scores of rational DMS.



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